



Demystifying AS4992 - The New Adhesive Standard

The Australian adhesives industry has been operating under the auspices of AS2358 since 1990. This is a standard which was based on the British System, but is 15 years old, and in need of review and update. The old standard had only one single pass mark – irrespective of the adhesive type, and made no reference to grouts. There was no means of recognizing other product features, such as open time, rapid setting and deformation. The test method, involving two porous biscuit tiles bonded together, was not representative of the real world. Accordingly, the new standard was modeled on the ISO13007 standard, which in turn was modeled on the European standards.

This new standard covers both adhesives and grouts. It categorises adhesives into three groups (based on their composition) – these are Cementitious (C), Dispersion (D), and Reaction Resin (R). Within each of these three categories, products are further differentiated by their properties – deformation (flexibility), open time, setting speed, and non-slump. The standard then allows for even further segmentation within these groups, by characterising them as normal and premium products. For grouts, it categorises them into two groups (based on their composition) – these are Cementitious (CG) and Reaction Resin (RG). Within each of these two categories, products are further differentiated by their properties – abrasion resistance, flexural strength, compressive strength, shrinkage and water absorption. The standard then allows for even further segmentation within these groups, by characterising them as normal and premium products.

The accompanying tables detail the properties and characteristics of the different adhesive and grout categories.

This standard brings forth a new era for the industry. It sets new, higher standards which adhesives need to meet, which can only further the reputation of tiling installations in comparison to other floor coverings. It forces adhesive manufacturers to more transparent with test results, and allows for better comparison to be drawn between adhesive systems.

For further details on the new standard, and for a complete overview of the Davco adhesive range, and how they all perform to this standard, call our Toll Free Advisory line on 1800 653 347 or email us at technical@davco.com.au

CEMENTITIOUS ADHESIVES (C)	
CATEGORY	CHARACTERISTICS AND REQUIREMENTS
C1	<p>Normal Setting Adhesive</p> <p>Fundamental Characteristics, Tensile Strength measured after:</p> <ul style="list-style-type: none"> • 28 days room temperature (RT) cure • 7 days RT cure + 21 days water soak • 14 days RT cure + 14 days cure at 70°C • Freeze Thaw cycling. • All ≥ 0.5 MPa • Tensile strength after 20 min open time - ≥ 0.5 MPa
C2	<p>Improved Setting Adhesive</p> <p>Tensile Strength measured after:</p> <ul style="list-style-type: none"> • 28 days room temperature (RT) cure • 7 days RT cure + 21 days water soak • 14 days RT cure + 14 days cure at 70°C • Freeze Thaw cycling. • All ≥ 1.0 MPa
Optional Characteristics	<ul style="list-style-type: none"> • F - Fast Setting (≥ 0.5 MPa after 24 hours RT cure) • E - Extended Open Time (30 minutes open time) • T - Slip Resistance - ≤ 0.5 mm • S - Transverse Deformation (Flexibility) <ul style="list-style-type: none"> ➤ S1 - ≥ 2.5 mm < 5 mm ➤ S2 - ≥ 5 mm

DISPERSION ADHESIVES (D)	
CATEGORY	CHARACTERISTICS AND REQUIREMENTS
D1	<p>Normal Setting Adhesive</p> <p>Fundamental Characteristics, Shear Strength measured after:</p> <ul style="list-style-type: none"> • 14 days room temperature (RT) cure • 14 days RT cure + 14 days cure at 70°C • All ≥ 1.0 MPa • Tensile strength after 20 min open time - ≥ 0.5 MPa
D2	<p>Improved Setting Adhesive</p> <p>Tensile Strength measured after:</p> <ul style="list-style-type: none"> • 21 days RT cure + 7 days water soak - ≥ 0.5 MPa • 14 days RT cure + 14 days cure at 70°C - ≥ 1.0 MPa
Optional Characteristics	<ul style="list-style-type: none"> • F - Fast Setting <ul style="list-style-type: none"> ➤ 7 days RT cure + 7 days water soak - ≥ 0.5 MPa ➤ 14 days RT cure + 14 days cure at 70°C - ≥ 1.0 MPa • E - Extended Open Time (30 minutes open time) • T - Slip Resistance - ≤ 0.5 mm

REACTION RESIN ADHESIVES (R)	
CATEGORY	CHARACTERISTICS AND REQUIREMENTS
R1	Normal Setting Adhesive Fundamental Characteristics, Shear Strength measured after: <ul style="list-style-type: none"> • 14 days room temperature (RT) cure • 7 days RT cure + 7 days water soak • All ≥ 2.0 MPa • Tensile strength after 20 min open time - ≥ 0.5 MPa
R2	Improved Setting Adhesive Shear Strength measured after: <ul style="list-style-type: none"> • Thermal Shock - ≥ 20. MPa
Optional Characteristics	<ul style="list-style-type: none"> • T - Slip Resistance - ≤ 0.5 mm

CEMENTITIOUS GROUTS (CG)	
CATEGORY	CHARACTERISTICS AND REQUIREMENTS
CG1	Fundamental Characteristics: <ul style="list-style-type: none"> • Abrasion Resistance (≤ 2000 mm³) • Flexural Strength Standard Conditions (≥ 2.5 MPa) • Flexural Strength Freeze Thaw (≥ 2.5 MPa) • Compressive Strength Standard Conditions (≥ 15 MPa) • Compressive Strength Freeze Thaw (≥ 15 MPa) • Shrinkage (≤ 3mm/m) • Water Absorption after 30 minutes (≤ 5g) • Water Absorption after 240 minutes (≤ 10g)
C2	Additional Characteristics to CG1: <ul style="list-style-type: none"> • Abrasion Resistance (≤ 1000 mm³) • Water Absorption after 30 minutes (≤ 2g) • Water Absorption after 240 minutes (≤ 5g)
Optional Characteristics	<ul style="list-style-type: none"> • F - Fast Setting – Must meet the CG1 compressive strength requirement under standard conditions after only 24 hours cure.

REACTION RESIN GROUTS (RG)	
CATEGORY	CHARACTERISTICS AND REQUIREMENTS
RG1	Fundamental Characteristics: <ul style="list-style-type: none"> • Abrasion Resistance (≤ 250 mm³) • Flexural Strength Standard Conditions (≥ 30 MPa) • Compressive Strength Standard Conditions (≥ 45 MPa) • Shrinkage (≤ 1.5mm/m) • Water Absorption after 240 minutes (≤ 0.1g)